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ABSTRACT

Random sampling of 407 vocational teachers in secondary schools and community colleges in California was undertaken to determine their inservice training needs. Aspects examined were (1) discrepancy between present and desired level of knowledge or competence on 40 statements regarding instruction of mainstreamed special education students; (2) statistical significance of discrepancies; and (3) effects of sex, age group, training, experience, and assignment on discrepancies. Results revealed that teachers felt a particular need for information about the legal standards and state laws related to special education, and about information sources on careers, professional organizations, local assisting agencies, programs and services for the handicapped, and special education terminology. Teachers cited training needs in evaluating student performance, using performance scales, and developing individualized education programs. Ss felt less need for training in classroom acceptance, positive interaction with the handicapped, behavior observation, enhancement of positive self concepts among special education students. environmental modification, and instructional accommodation for architectural barriers. Significant demographic differences were noted, including that among the light areas of vocational education, health services and office training teachers had the highest mean differences between current and desired knowledge or competence; and distributive, agriculture, and technical areas had the lowest. (CL)

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SPECIAL EDUCATION TRAINING NEEDS OF VOCATIONAL TEACHERS

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Prepared Under Grant No. 42-B353-81-3293-7101 from
the California State Department of Education

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FOREWORD

This project was funded by the California State Department of Education under Part B of Public Law 94-142, Education for All Handicapped Children Act. The study started December 15, 1980 and was completed in December 1981.

The findings and conclusions of the study are the sole responsibility of the investigators and do not imply the official position or endorsement of the California State Department of Education nor the sponsoring agency.

The investigators wish to thank the 407 vocational educators who took time and thought to reply to the 40-question survey instrument. A special thanks is in order to Dr. Lalit Roy, consultant for the State Department of Education, for his helpful suggestions and patient understanding of the delays in completing this project.

Dr. John M. Ryan provided invaluable assistance in constructing the questionnaire and interpreting the data, and Dr. Herbert Wong designed the computer program which has provided so much useful analysis. Eleanor Vincent, who was so helpful in developing the original proposal, has served as editor of the interim reports and this final report. All three deserve special recognition for their contributions.

Special mention likewise is made to the constant attention to detail given to many phases of the project by the research secretary, Mrs. Virginia Alvarado, and for the tedious work of the data entry clerks, Lori Sylvia and Susan Seltzer.

EXECUTIVE SUMMARY

BACKGROUND AND NEED:

Public law now provides for the handicapped to receive appropriate and equal education in the "least restrictive environment," which is likely to be the regular classroom. Although federal and state governments are presently supporting special education programs for approximately 8% of the school population, recent compliance reviews reveal that many handicapped students are not receiving the benefits to which they are entitled. Most of these students will be enrolled, at some time in their school careers, in some kind of vocational education, a subject of particular importance to this group because of their limited career options.

This puts increasing pressure on vocational teachers, most of whom have never received any special training for this added responsibility. The purpose of this study was to identify the inservice training needs of vocational education teachers who have, or may have, special education students in their classes.

METHODS OF THE STUDY.

The study involved a state-wide random sampling of 407 vocational teachers in secondary schools and community colleges in California.

An instrument was developed and piloted, which measures the difference between teachers' perceptions of their present and desired levels of competency and knowledge in teaching special education students, particularly those mainstreamed into regular classes. The statements were adapted from a U.S. Department of Education questionnaire, condensed from 96 to 40 statements, and augmented by five items to secure demographic information.

The random sample for the secondary teachers was computer-developed by the California Basic Education Data System to provide the names of 500 vocational teachers, half of whom presently deal with special education students. The community college sample was drawn by making a random sample of 15 of the 108 colleges, listing all of the vocational educators in those colleges, and taking a random sample of 225 of these.

DATA ANALYSIS:

A total of 407 questionnaires were returned (out of 683 valid names), making

a response rate of 60%. Seventeen of the returned questionnaires arrived too late to be included in the data base for analysis. Computer operations using the Statistical Analysis System (SAS) computer software package were carried out at the Computer Center at the University of California, Santa Barbara.

Data analysis was conducted to examine 1) discrepancy between present and desired level of knowledge or competencies for all 40 statements, 2) whether the discrepancies were significantly different, and 3) whether different sub-groups (men/women, age group, training, experience, and assignment) differ in the perceived discrepancies between present and desired level of knowledge or competencies.

FINDINGS AND CONCLUSIONS:

The mean difference between the present level and the desired level of competency and knowledge for each of the 40 statements was reported on a ten point scale. Results ranged from 4.522 (high discrepancy) on statement number 31 (knowledge of legal standards) to 1.830 (low discrepancy) on statement number 16 (acceptance of handicapped students). In computing the dependent "t" test on the difference between the present and desired levels, it was found that all the differences are significant.

An analysis of the large discrepancy statements vs. the low discrepancy statements reveals that the teachers felt a particular need for information about the legal standards and state laws related to special education. They also wanted to know more about the sources of information on careers, professional organizations, local assisting agencies, other programs and services for the handicapped, and professional vocabulary related to special education.

The respondents also felt the need for training in evaluating student performance, using performance scales, and developing the Individual Education Program (IEP). They also recognized a need for knowing how to follow up the handicapped who have had vocational education and ways for providing employers with orientation to special education.

The responding teachers apparently felt more confident, and therefore less need for inservice, concerning their classroom skills for accepting the handicapped in their classes without bias, interacting positively with the handicapped, evaluating behavior by observation, assisting in developing and maintaining a positive

self-concept among the special education students, modifying the instructional environment to accommodate handicapped students, and adjusting instruction to accommodate for architectural barriers.

There was a greater perceived need for knowledge than for competency; however, both have large enough differences between present and desired levels to recommend inservice training.

The demographic factors in the study bring out the following significant differences: 1) Among the eight areas of vocational education, the health services and office training teachers had the highest mean differences and distributive, agriculture, and technical areas had the lowest.

2) There is an expected inverse relationship between high mean differences and the amount of academic training and years of experience.
3) Teachers over 50 years of age perceived the greatest need for inservice.
4) Women, significantly more than men, perceived a need for improving their competencies.
5) Secondary teachers now teaching the handicapped in their classes and community college teachers registered lower mean differences than the secondary teachers not now teaching the handicapped. There were no statistically significant differences for any one statement for all three groups.

RECOMMENDATIONS:

1. That all vocational education teachers be offered inservice training which will improve their competency and knowledge in dealing with special education students.
2. That the training emphasis, at least until local need is further identified, be on the special knowledge needed to teach and serve the handicapped.
3. That the initial emphasis be on inservice programs for health service and office training teachers, for women in all categories, and for the teachers with the least amount of training and experience.
4. That, if there is any resistance to vocational inservice, a survey similar to the one in this project be used to determine local needs and to give local persons an opportunity to provide direction for the

inservice programs in which they will participate.

5. That, considering the heterogeneity of the vocational educators surveyed, the recommendations of this study be applied to all secondary and community college teachers who have or will have special education students in their classes.

DISSEMINATION PLAN:

A small brochure pointing out the essential findings will be sent to all of the respondents to the survey, as promised. This brochure will also be used for presentations to workshops and conference groups, as suggested by the SDE.

Results of the study, as approved by the S.D.E., will be submitted as articles for the newsletters and journals of professional organizations interested in vocational education, such as the American Vocational Association and the California Association of Vocational Education. as well as organizations representing the handicapped.

An oral presentation, with materials for distribution, will be prepared for the Commission on Special Education. Contacts will be made with a variety of organizations and educational institutions to arrange presentations at meetings, conferences, and inservice training sessions.

TABLE OF CONTENTS

	Page
Foreword	i
Executive Summary	11
Table of Contents	vi
List of Tables	vii
I Introduction	
A. Historical Background	1
B. Statement of the Problem	1
C. Review of Related Literature	1
D. Need for the Study	2
E. Hypotheses	3
II Methods of the Study	
A. Study Approach	4
B. Data Collection Process	4
C. Data Analysis	5
D. Dissemination	6
III Findings	
A. General Findings for All Respondents	8
B. Specific Findings	15
1. Vocational Teaching Category	15
2. Academic Degree	20
3. Age	23
4. Years of Experience	26
5. Sex	29
6. Teaching Assignment	32
IV Conclusions and Recommendations	
A. Conclusions	35
B. Recommendations	36
V Bibliography	38
VI Appendix: Survey Instrument	40

LIST OF TABLES

Table	Subject	Page
1	Means and Standard Deviations of the Differences Between Perceived and Desired Levels	11
2	Rank Order of Survey Statements According to Mean Differences Between Present and Desired Levels of Competency or Knowledge	12
3	The Ten Highest and Ten Lowest Ranked Desired Competencies	14
4	Differences by Vocational Category	17
5	Greatest and Lowest Differences by Vocational Category	19
6	Differences by Academic Degree	21
7	Greatest and Lowest Differences by Academic Degree	22
8	Differences by Age	24
9	Greatest and Lowest Mean Differences According to Age	25
10	Differences by Years of Experience	27
11	Greatest and Lowest Differences by Years of Experience	28
12	Differences for Sex	30
13	Greatest and Lowest Differences for Sex	31
14	Differences Between Teachers by (1) Secondary Teaching Handicapped (2) Secondary Not Teaching Handicapped and (3) Community College Teachers	33
15	Greatest and Lowest Differences Between Teaching Assignment: (1) Secondary Teaching Handicapped (2) Secondary Not Teaching Handicapped and (3) Community College Teachers	34

SECTION I - INTRODUCTION

A. Historical Background: For many years, and particularly since the 1940's, Americans have accepted their humanitarian responsibility toward the handicapped, but only in the past decade has the American public come to realize fully the social and economic benefits of providing the handicapped person an opportunity to be gainfully employed. As costs of services to the handicapped have increased, the economic values of vocational training for this group have received greater recognition. With this has come the realization of the value of productive work to the handicapped person himself. P.L. 94-142, Section 504 of P.L. 94-112, and the educational amendments to P.L. 94-482 have provided much of the impetus for this change.

B. Statement of the Problem: Public law now provides for the handicapped to receive appropriate and equal education in the "least restrictive environment," which is likely to be the regular classroom, but recent Office of Civil Rights compliance reviews reveal that many handicapped students are not receiving these benefits to which they are entitled. This puts increasing pressure on the schools to provide appropriate vocational education for special education students, and this pressure is being passed along to vocational teachers, most of whom have never received any special training for this added responsibility.

At the present time, federal and state governments are supporting programs of special education for approximately 7.6% of the school population.* Except for the .73% who are most severely disabled,** most of these students will be enrolled, at some time in their school careers, in some kind of vocational education, a subject of particular importance to this group whose future career options are likely to be more limited than those of other students.

C. Review of Related Literature: Apparently there have been no previous studies with the specific objective of determining the needs for special education training for vocational teachers. A search of the literature included a review of more than 20 books, pamphlets, and articles related to vocational education for the handicapped. (See Bibliography.) From the list, only two or three involved formal surveys, and none of these were of a comprehensive nature designed to discover the perceived needs of vocational teachers in dealing with special education students, and none provided substantive demographic data on the teachers (grade, years of experience, etc.).

* - State Department of Education 1979-80

** - Per Santa Barbara County records for 1981-2 classes for the severely handicapped plus a few individuals in state hospitals and private schools.

A school-site assessment guide which examines administration, funding, and curriculum can be found in the California publication Five H: Format for Improving Vocational Education for the Handicapped (1979). However, it does not assess teachers' perceptions of their ability to work with handicapped students.

The University of Minnesota surveyed 998 vocational teachers and 364 industrialists using a 49-item survey to determine perceived priorities for research and development. It revealed a high demand for providing opportunities for teachers to improve their competencies, but did not deal specifically with training for teaching the handicapped (Dryer and Smith, 1978).

A study of 161 newly-employed Ohio vocational teachers attending a 1978 workshop used the Tennessee Self-Concept Test and a survey instrument which brought out demographic data such as age and amount of formal training, but did not relate these to the teaching of the handicapped (Sage, 1979).

A state-wide assessment and evaluation of occupational programs for the disadvantaged and handicapped in North Carolina identified eight "problem areas," of which "training" was one (Rice, 1978). Other references to training were found in the survey of the literature, but none involved a specific assessment of vocational teachers' perceived needs for teaching the handicapped.

In July, 1980 the U.S. Department of Education issued a Request for a Proposal for a survey to measure the discrepancy between present knowledge and desired knowledge of vocational teachers relative to special education. However, this study was not specific to California, did not plan to collect any demographic data, and provided a test instrument with compound statements requiring more than one answer, and with 96 double-response questions, the length of which threatens its validity. With considerable condensing and revision, this instrument could be reconstructed into a valid survey tool, and it was used in developing the instrument for this study.

D. Need for the Study: As the historical background of the problem implies, the increased recognition of the employment potential of many handicapped persons, plus public realization of the benefits to both society and the individual when the handicapped are gainfully employed, point up the expanding role of vocational education and the urgency of examining the personnel development needs of vocational teachers who serve -- or will be serving -- these handicapped students.

Against this background, the study was designed to meet the following specific

needs:

1. To assess the present perceived knowledge and competencies of vocational teachers in relation to special education.
2. To compare vocational teachers' present perceived levels with their desired levels of competency and knowledge.
3. To analyze this information and present the results in a form that will provide direction for future pre-service and inservice training.

There are reported to be 35,556* vocational education teachers in California secondary schools and community colleges, plus 3,285* in Regional Occupation Programs (1978-79). Since most of these persons will, at some point in their teaching careers, be called upon to work with special education students mainstreamed into their classes, the dissemination phase of this study was planned to reach as many of these teachers as possible, using a variety of methods to point out inservice training needs in relation to teaching special education students.

Hypotheses: The purpose of this study -- to identify the needs for special education training of vocational teachers -- is based on the general assumption that pre-service and inservice training of vocational teachers could be improved if school inservice planners and vocational educators in teacher-training institutions were more aware of teachers' own perceptions of their needs in relation to teaching special education students. The current survey was based on two hypotheses:

1. That vocational teachers can define their needs for additional and/or special inservice training to help them deal with handicapped students, and for pre-service training which would have been helpful to them.
2. That the needs of teachers in dealing with the handicapped, as perceived by vocational teachers, differ among secondary and community college teachers and differ according to such demographic factors as age, position, or experience.

* Vocational Education Unit, California Department of Education

SECTION II - METHODS OF THE STUDY

A. Study Approach: This study involved a state-wide survey of 407 vocational teachers in secondary schools and junior colleges. Data were collected from a mail questionnaire with 40 double-response items requiring teachers to evaluate their present level of knowledge or competence in teaching handicapped students and their desired level. It was carried out in the following phases: data collection, data analysis, and dissemination, as described below:

B. Data Collection Process: Between December 17, 1980 and March 20, 1981, the survey instrument was developed, the populations to be sampled were selected, and the arrangements for conducting the survey were made.

The instrument was a questionnaire designed to measure the difference between teachers' perceptions of their present and desired levels of competence and knowledge in teaching of special education students. It was a condensed and revised version of the U.S. Department of Education questionnaire discussed previously on page two in this report. To it were added questions to provide demographic information about the respondents, such as previous training, experience, vocational specialty, etc.

The survey form (Appendix) consisted of 40 statements, the first 30 on competencies and the other 10 on knowledge regarding the teaching of special education students. The respondents were asked to place a number between one (low) and ten (high) after each statement to indicate what the teachers felt represented their present level of competency or knowledge. In a second column, respondents were asked to record a number which represented their desired level.

The development of a survey instrument by the project staff was necessary because of the lack of a suitable existing instrument for this purpose. Since it was used state-wide, it was submitted to the state Data Acquisition and Review Committee (DARC) for the required approval before use.

The random sample of all secondary vocational teachers in California was developed by the California Basic Education Data System (CBEDS) to provide the names of 500 vocational teachers in secondary schools of the state. Half of these were to be teachers presently dealing with handicapped students. CBEDS was also to provide demographic data about the sample population. This information was not provided

in time to be used and therefore the survey instrument was revised and reprinted to collect the information about age, sex, level of training, years of teaching experience, and time in present assignment, as well as the vocational teaching area.

For the community colleges, a list of of vocational teachers was obtained from a random sample of 15 colleges and, from the total list of vocational teachers, 225 were randomly selected for the survey.

To collect the data, the following steps, adapted from Seymour Sudman's Applied Sampling, were taken to obtain as large a sample as possible:

- o An "Alert Card" announced that they would be receiving the survey form.
- o The survey form included a letter of explanation about the survey and offered a chance to receive a hand-held calculator for returning the response. Also included was a letter from the State Department of Education authorizing the study and a self-addressed, stamped return envelope.
- o A reminder letter was sent to those who had not returned the survey form after two weeks.
- o A second copy of the survey form was sent after 30 days to those who had "misplaced" them, along with a letter of personal appeal.
- o A third copy of the survey form, a personal letter, and another self-addressed, stamped return envelope was sent the second week of September, 1981.
- o A fourth copy of the survey form with a special hand-written letter to "Dear Outstanding Vocational Educator" was sent in a hand-addressed envelope on or about October 1, 1981.

It was initially felt that the first four steps would be adequate to produce a 70 percent return; however, because of unanticipated delays in getting the address labels from CBEDS, the first mailing did not go out until the week before Easter, April 13-19, several days after the mailing of the Alert Cards.

The mailings were made by an independent agency which held the address labels so as to insure the anonymity of the respondents. The coded survey forms were returned directly to the project director who, in turn, reported the code numbers back to the independent agency, which then developed the next mailing list.

C. Data Analysis: A total of 407 questionnaires were returned, making a response rate of 60%. A coding scheme was developed for the questionnaires so that

data could be formatted and entered in the computer. Seventeen of the returned questionnaires arrived after the data file was recreated, and were not included in the data base for analysis. The data file was created through the Statistical Analysis System (SAS) computer software package. All computer operations were carried out at the Computer Center at the University of California, Santa Barbara.

Data analysis was conducted to examine 1) discrepancy between present and desired level of knowledge or competencies for all 40 statements, 2) whether the discrepancies were significantly different, and 3) whether different sub-groups (i.e., men and women, age groups, training, and assignment) differ in the perceived discrepancies between present and desired level of knowledge or competencies.

Means and standard deviations were computed for the discrepancy between present and desired levels. Correlated (dependent) t-statistics were computed for each of the 40 discrepancy scores to determine whether the differences were statistically significant. In order to examine group differences on the discrepancy scores, analysis of variance through Duncan's multiple range procedure was used to compute group means for each of the discrepancy scores and determine whether there were statistically significant group differences. Duncan's multiple range is a convenient procedure for examining group differences as the computer program generates statistical tests between the different groups instead of just computing the overall group effect (like most of the ANOVA programs). Duncan's multiple range yields only an approximation of the statistical test between groups when the sizes of different groups are markedly different. In order to ensure that the result of the Duncan's multiple range test is robust, the Scheffe test is also used for adjusting for the differences in group size. The Scheffe test did not alter the substantive interpretation of the result from the Duncan's multiple range procedure.

The results of the data analysis are reported in Section III - Findings, which follows.

D. Dissemination: A small brochure pointing out the essential findings will be printed for all of the respondents to the survey, as promised. This brochure will also be used for presentations to workshops and conference groups as suggested by the SDE.

When approved, the study results will be submitted to newsletters and journals of professional organizations interested in vocational education, such as the

American Vocational Association and the California Association of Vocational Education, as well as organizations representing the handicapped.

An oral presentation, with materials for distribution, will be prepared for the Commission on Special Education. Contacts will be made with a variety of organizations and educational institutions to arrange presentations at meetings, conferences, and inservice training sessions. A place on the program will be requested at the state-wide annual conference of the California Association of Vocational Education. Brochures will be provided for distribution at the state conference of the Association of California School Administrators and other meetings where personal presentations are not made.

A copy of the complete report, plus a stock of the brochures, will be sent to the executive offices of the American Vocational Association.

SECTION III - FINDINGS

The success of mainstreaming depends largely on the ability of the teaching profession to assume new roles, for which they may require training or retraining. The urgency of this training is given a high priority by the U.S. Bureau of Education for the Handicapped and by the California Office of Special Education. The information produced by this study provides guidelines for designing this needed pre-service and inservice training for vocational teachers who are -- or will be -- dealing with special education students in their classes.

Of importance in planning future training is an analysis of teachers' needs as seen by teachers themselves, not as they are determined by some "authority." This information has been obtained from the detailed analysis of the discrepancies between teachers' perceived levels of present competency and knowledge and the levels they feel they should have to effectively meet the needs of the special education students in their classes. Additional analyses were made to relate these discrepancies to a variety of demographic variables (age and sex of the teacher, academic training, experience, area of specialty, and teaching assignment), so that training content can be adapted to the needs of each teacher group.

Although the primary purpose of the study was to provide useful information for the planning of inservice training, the survey has an additional value, in that the teachers who participated should have been able to recognize their own needs and be motivated to acquire additional training. This study can also provide an impetus for improving teacher preparation at the college level, as well as helping present teachers obtain the training they need. The final result, of course, is to improve the potential for success of the special education students in California schools.

A. General Findings for All Respondents: As reported in Table 1, the mean difference between the present level and the desired level of competency and knowledge for each of the 40 statements was reported on a ten point scale. Results ranged from 4.522 (high discrepancy) on statement number 31 (dealing with legal standards) to 1.830 (low discrepancy) on statement number 16 (accepting handicapped students). In computing the dependent "t" test on the difference between the present and desired levels, it was found that all the differences are significant.

An analysis of the high discrepancy statements vs. the low discrepancy statements reveals that the teachers felt a particular need for information about the legal standards and state laws related to special education. They also wanted to

know more about the sources of information on careers, professional organizations, local assisting agencies, other programs/services for the handicapped, and professional vocabulary related to special education.

The respondents also felt the need for training in evaluating student performance, using performance scales, and developing the Individual Education Program (IEP). They also recognized a need for knowing how to follow up the handicapped who have had vocational education and ways for providing employers with orientation to special education.

The responding teachers apparently felt more confident, and therefore less need for inservice, concerning their classroom skills for accepting the handicapped in their classes without bias, interacting positively with the handicapped, evaluating behavior by observation, assisting in developing and maintaining a positive self-concept among the special education students, modifying the instructional environment to accommodate handicapped students, and adjusting instruction to accommodate for architectural barriers.

Table 1 shows the number of respondents, the mean difference between the present and desired levels of competence for each of the 40 aspects surveyed, and the standard deviation of the differences. Table 2 lists the 40 statements according to the rank of the mean difference, with the indication of the greatest need for training being statement number 31 and the indication of the least need for training being statement number 16, which is ranked 40th.

Indicative of the perceived difference between the "competency" statements (1 through 30) and the "knowledge" statements (31 through 40) are the means of the differences for each group. The former is 3.366 compared to 4.192 for "knowledge." This indicates that the vocational educators in this sample perceived their inservice needs to be greater in the areas of knowledge and less in the areas involving competency. However, the differences in both categories are large enough to recommend inservice training.

Table 3 presents in rank order the ten competencies/knowledges stated in the questionnaire which the respondents indicated they desired the most. Following these are the ten competencies/knowledges stated in the questionnaire which the respondents desired the least, with the last item, number 40, having the lowest score of all.

The column at the far right shows the rank order of how the teachers perceived their present level of competencies/knowledges for these items.

It can be noted that the ten competencies which the teachers rank as those they most desired correlate closely with those in which they perceived themselves to be most competent and that the ten which they rank as least desired tend to be those in which they feel themselves least competent.

As shown in Table 2, the items for which teachers indicate the least difference between their present and desired levels of competency/knowledge correlate closely with the list of the ten most desired. Also, the items for which teachers indicate the greater difference between their present and desired levels of competency/knowledge are among the least desired competencies/knowledges.

This may indicate that teachers either have made an effort to become competent in those areas which they feel are most important (the ten most desired) or they rationalize their lack of competence in other items (the ten least desired) by viewing them as least important.

Table 1

MEANS AND STANDARD DEVIATIONS OF THE DIFFERENCES BETWEEN PERCEIVED AND DESIRED LEVELS

Statement	N	Mean Present Level	N	Mean Desired Level	Mean Diff. of Pairs	Standard Deviation
1	374	4.118	369	7.564	3.665	2.624
2	378	4.714	375	7.890	3.472	2.687
3	368	5.239	365	8.014	3.102	2.770
4	378	5.167	369	8.453	3.381	2.806
5	379	5.003	376	8.215	3.362	2.688
6	381	4.877	375	8.205	3.503	2.724
7	379	4.747	373	7.941	3.368	2.617
8	372	3.640	365	7.101	3.664	2.770
9	377	5.775	373	8.668	3.092	2.481
10	375	3.051	371	6.935	4.024	2.904
11	379	5.261	370	8.438	3.328	2.584
12	378	4.910	372	8.134	3.395	2.673
13	379	7.142	369	9.127	2.155	2.299
14	370	4.900	366	7.915	3.243	2.540
15	363	4.162	357	7.465	3.535	2.845
16	377	7.401	360	8.897	1.830	2.422
17	367	4.398	358	7.707	3.416	2.705
18	378	4.902	370	8.114	3.310	2.629
19	371	4.288	369	7.545	3.479	2.753
20	364	3.458	360	6.672	3.463	2.874
21	375	3.984	372	7.293	3.429	2.898
22	379	5.448	371	8.835	3.643	2.541
23	375	3.720	372	7.172	3.672	2.939
24	370	3.914	363	7.468	3.793	3.022
25	378	5.667	369	8.290	2.782	2.643
26	374	4.684	366	7.929	3.458	2.798
27	378	4.537	374	7.965	3.567	2.785
28	370	4.402	365	7.523	3.280	2.825
29	369	3.678	368	7.239	3.730	3.044
30	369	3.322	370	7.065	3.904	3.069
31	375	3.219	377	7.599	4.522	3.006
32	376	4.072	375	7.925	4.070	2.885
33	374	3.706	376	7.745	4.211	2.863
34	371	3.323	369	7.572	4.448	2.923
35	369	3.493	367	7.439	4.191	2.916
36	371	3.710	371	7.644	4.123	2.944
37	370	3.911	370	7.486	3.817	2.898
38	373	3.627	372	7.839	4.409	2.987
39	372	4.263	372	8.108	3.989	3.065
40	373	3.367	372	7.274	4.144	3.037
		4.431		7.810	Mean difference for all 40	3.572

Table 2

RANK ORDER OF SURVEY STATEMENTS ACCORDING TO MEAN DIFFERENCES BETWEEN PRESENT AND DESIRED LEVELS OF COMPETENCY OR KNOWLEDGE

Rank		Mean Diff.
1	31. Legal standards appropriate for teaching handicapped students.	4.522
2	34. Modifications of machinery, tools, and facilities needed for handicapped students.	4.448
3	38. State laws regarding vocational special education.	4.409
4	33. Sources for information on career educational adaptations for the handicapped students.	4.211
5	35. Modifications of jobs to accommodate the limitations of handicapped persons.	4.191
6	40. Professional education organizations concerned with the needs of handicapped learners.	4.144
7	36. Appropriate expectations (approved scales) for the performance of handicapped persons.	4.123
8	32. Local agencies to assist handicapped students for additional training, such as vocational rehab., community colleges, and appropriate voluntary associations.	4.070
9	10. Provide orientation for potential employers of handicapped students.	4.024
10	39. Programs and services provided through the Special Education in your vocational area.	3.989
11	30. Obtain follow-up information on handicapped students who have had vocational classes.	3.904
12	37. Vocabulary of other professionals used in reports concerning handicapped students.	3.817
13	24. Evaluate the performance of handicapped students according to the objectives of the IEP.	3.793
14	29. Assist handicapped students in finding employment.	3.730
15	23. Assist in the development of the Individualized Educational Program (IEP) for handicapped students.	3.672
16	1. Use and supervise support service personnel in providing vocational training for handicapped persons.	3.665
17	8. Counsel parents/gardians of handicapped students regarding their children's occupational goals.	3.664
18	22. Develop an awareness of how to recognize students with learning problems in the regular classroom.	3.643
19	27. Evaluate the degree to which vocational programs meet the needs of the handicapped.	3.567

Table 2 (continued)

Rank		Mean Diff.
20	15. Select cooperative training stations for each handicapped learner.	3.535
21	6. Assist in identifying vocational education objectives for the handicapped student.	3.503
22	19. Complete cooperative training agreements unique to meeting the needs of each handicapped learner.	3.479
23	2. Communicate effectively with other professions to solve problems of handicapped students.	3.472
24	20. Conduct parent/teacher conferences for planning instructional programs.	3.463
25	26. Use behavior modification techniques with handicapped students.	3.458
26	21. Develop an integrated program for each handicapped student in cooperation with other school personnel.	3.429
27	17. Translate statements describing physical and sensory limitations into statements concerning instructional adaptations.	3.416
28	4. Refer handicapped students to appropriate school and community assistance resources.	3.381
29	7. Advise and counsel handicapped students relative to their occupational goals.	3.368
30	5. Assist the handicapped student in assessing his/her assets and limitations.	3.362
31	11. Use a variety of teaching methods to provide instruction for handicapped students.	3.328
32	12. Apply individual instructional prescriptions to all handicapped pupils in classes.	3.325
33	18. Sequence tasks to conform with learning styles, pace, and potential of handicapped students.	3.310
34	28. Integrate handicapped students in an ongoing student vocational organization.	3.280
35	14. Modify the instructional environment for each handicapped learner.	3.243
36	3. Adjust to accommodate architectural barriers which interfere with the training of handicapped.	3.102
37	9. Assist handicapped students in developing and maintaining positive self-concepts.	3.092
38	25. Evaluate the behavior of handicapped students through observation.	2.782
39	13. Interact positively with the handicapped student.	2.155
40	16. Accept handicapped students on the same basis as others in my classes.	1.830

Table 3

THE TEN HIGHEST AND TEN LOWEST RANKED DESIRED COMPETENCIES

Desired Level Rank	The Ten Highest Ranked Desired Competencies (Statement Number in Parentheses)	Present Level Rank
1	Interact positively with the handicapped student. (13)	2
2	Accept handicapped students on the same basis as others in my classes. (16)	1
3	Develop an awareness of how to recognize students with learning problems in the regular classroom (22)	5
4	Assist handicapped students in developing and maintaining positive self-concepts. (9)	3
5	Refer handicapped students to appropriate school and community assistance resources. (4)	8
6	Use a variety of teaching methods to provide instruction for handicapped students. (11)	6
7	Evaluate the behavior of handicapped students through observation. (25)	4
8	Assist the handicapped student in assessing his/her assets and limitations. (5)	9
9	Assist in identifying vocational education objectives for the handicapped student. (5)	13
10	Apply individual instruction prescriptions to all handicapped pupils in classes. (12)	10
Items 11-30 omitted		
	The Ten Lowest Ranked Desired Competencies	
31	Evaluate the performance of handicapped students according to objectives of the IEP. (24)	39
32	(Knowledge of) modifications of jobs to accommodate the limitations of handicapped persons. (35)	34
33	Develop an integrated program for each handicapped student in cooperation with other school personnel. (21)	25
34	(knowledge of) professional education organizations concerned with the needs of handicapped learners.	36
35	Assist handicapped students in finding employment. (29)	31
36	Assist in the development of the Individualized Educational Program (IEP) for handicapped students. (23)	28
37	Counsel parents/guardians of handicapped students regarding their children's occupational goals. (8)	32
38	Obtain follow-up information on handicapped students who have had vocational courses. (30)	38
39	Provide orientation for potential employers of handicapped students (10)	40
40	Conduct parent/teacher conferences for planning instructional programs. (20)	35

B. Specific Findings: Tables 4 through 15 present two sets of data for each of six different variables relating to the respondents, which may be considered when planning inservice training. The first table for each of these variables (vocational teaching category, academic degree, age, experience, sex, and teaching assignment) is presented according to the 40 statements, with the total number of respondents (N) followed by the number of responses for the component (n) and the mean difference between the present level and the desired level of competency or knowledge. Mean differences for all 40 statements in each component are also shown.

These data have been computer analyzed to determine those statements having mean differences that are statistically significant at the .05 level of confidence, according to Duncan's multiple range procedure, meaning that only one time in 20 would such a difference occur by chance alone.

The second table in each case presents, in rank order, the numbers and mean differences of the seven statements with the highest mean differences (inservice areas perceived as needing the greatest emphasis) and the three items with the lowest mean differences (inservice areas perceived as needing the least emphasis).

1. Vocational Teaching Category

Table 4 shows the mean differences for the present and desired levels for each of the 40 statements and for each of the eight vocational teaching categories. Where two or more teaching categories were checked, the scores are shown in the ninth subgroup (column).

In an examination of the mean differences for all 40 questions, it can be seen in the table below that teachers in the health and office categories perceive the greatest need for inservice, while those in distributive and agriculture perceive the least.

Rank	Category	Mean Diff.	Rank	Category	Mean Diff.
1	Health	3.781	6	Technical	3.216
2	Office	3.751	7	Agriculture	3.152
3	Industrial Arts	3.602	8	Distributive	3.078
4	Trade and Industry	3.556			
5	Consumer Ed. and Home Economics	3.512			

Certain statements, as shown in Table 5, turned out to be unique to individual categories. In ranking the seven statements with the highest difference between present/desired levels, five of the categories were found to contain a statement not included among the highest ten by the others: Agriculture - #10 (orientation for potential employers); Distributive - #8 (counsel parents and guardians); Health - #27 (evaluate how well vocational education meets the need of the handicapped), and Industrial Arts - #1 (using vocational education support service personnel). These were all subject areas indicating need for inservice. Office - #23 (assist in developing IEP's) was a statement on the lower end of the scale, indicating little need for inservice.

As shown in Table 5, the statements with the highest differences represented most often were number #38 (state laws regarding vocational special education) and #34 (modification of machinery, tools, and facilities needed for handicapped students). Among those with low differences, the statements represented most often were #16 (accept handicapped students on the same basis as others) and #13 (interact positively with handicapped students), indicating that most teachers considered themselves well-prepared in these two respects.

Table 4

DIFFERENCES BY VOCATIONAL CATEGORY

Statement	N	Agriculture n	Agriculture Mean	Distributive n	Distributive Mean	Health n	Health Mean	Cons. & Home Ec. n	Cons. & Home Ec. Mean	Ind. Arts n	Ind. Arts Mean	Office n	Office Mean	Technical n	Technical Mean	Trade & Industry n	Trade & Industry Mean	More than one n	More than one Mean
1	360	19	3.053	8	2.375	34	4.118	66	3.803	66	3.652	68	3.897	24	3.750	30	3.900	44	2.818
2	366	19	2.105*	8	2.250	35	3.486	67	3.492	69	3.696	69	3.870*	24	3.250	30	3.400	45	3.022
3	355	18	3.167	8	3.125	33	2.606	65	3.477	67	3.015	66	3.758	25	2.680	28	2.821	44	2.591
4	360	19	2.105*	8	1.500*	34	3.853	68	3.412	66	3.591	66	4.333*	25	2.560*	29	2.827*	44	2.841*
5	366	19	2.632*	7	2.714*	33	3.235	69	3.493	67	3.149	69	4.174*	25	2.720*	29	3.103	46	3.174
6	367	19	3.316	8	2.000	35	3.200	70	3.386	68	3.691	67	4.000	25	3.520	29	3.551	45	3.000
7	365	19	2.105	8	3.625	35	3.314	68	3.485	68	3.397	68	3.794	24	3.042	30	3.867	44	2.705
8	356	19	3.000	8	4.625	34	3.559	66	3.288	66	3.545	67	4.284	24	3.208	29	4.621	42	3.071
9	363	19	2.053	8	2.500	34	3.147	69	2.710	68	3.206	68	3.603	24	3.375	28	3.179	44	2.909
10	362	19	4.053	8	5.000	34	3.824	67	3.881	67	3.642	67	4.537	25	3.800	30	4.567	44	3.682
11	362	19	2.684	8	2.125	34	3.794	69	3.464	66	3.379	67	3.806	25	2.280	29	3.241	44	3.091
12	362	19	2.684	8	3.000	34	4.176	67	3.209	66	3.106	67	3.672	25	2.720	29	2.793	46	3.609
13	360	19	2.105	8	1.500	34	2.500	69	1.667	65	2.400	65	2.538	25	2.520	29	2.172	46	1.667
14	355	19	2.842	8	1.250	33	3.636	67	3.104	63	3.540	67	3.657	24	2.333	29	2.966	44	3.455
15	350	19	3.000	8	2.250	32	4.094	65	3.215	63	3.778	67	3.776	23	3.522	30	3.333	42	3.405
16	351	19	2.316	8	1.375	31	2.194	67	1.284*	64	1.891	66	2.364*	24	1.500	28	1.929	43	1.605
17	350	18	3.667	7	3.286	33	3.061	67	3.567	64	3.375	67	4.269*	23	2.609*	27	2.815*	43	3.023
18	361	19	2.895*	8	2.750*	35	3.400	69	3.638	66	2.939*	66	4.030*	24	3.000	29	3.034	44	3.114
19	358	19	3.000	8	3.500	35	4.086	66	3.500	65	3.446	67	3.687	23	2.826	30	3.767	44	3.068
20	347	19	3.211	8	4.125	32	3.688	65	3.585	67	3.045	65	3.646	22	2.727	29	3.759	39	3.564

* Statistically significant differences at the .05 level

Table 4 (continued)

DIFFERENCES BY VOCATIONAL CATEGORY

Statement	N	Agriculture n	Agriculture Mean	Distributive n	Distributive Mean	Health n	Health Mean	Cons. & Home Ec. n	Cons. & Home Ec. Mean	Ind. Arts n	Ind. Arts Mean	Office n	Office Mean	Technical n	Technical Mean	Trade & Industry n	Trade & Industry Mean	More than one n	More than one Mean
21	361	19	3.474	8	2.375	34	3.735	67	3.478	68	3.176	67	3.910	24	3.083	30	3.300	43	3.256
22	363	19	3.421	8	2.250	34	3.294	70	3.529	66	3.288	68	4.132	24	3.708	30	3.967	43	3.140
23	359	19	3.000	8	3.250	33	4.182	67	3.507	68	3.838	68	3.441	22	3.636	30	4.333	43	3.442
24	351	19	3.316	8	4.875	34	3.912	66	3.788	66	3.530	65	4.000	22	3.364	28	4.286	42	3.643
25	360	19	2.000	8	2.625	34	2.882	67	2.358	66	2.773	67	3.463	24	2.875	30	2.200	44	2.909
26	358	19	3.000	8	2.500	34	3.588	67	3.119	65	3.338	67	3.881	23	3.783	30	3.167	44	3.705
27	365	19	2.158*	8	2.375	34	4.441*	70	3.414	69	3.522	65	4.108*	24	3.708	30	3.500	45	3.178
28	356	19	1.737*	8	1.500*	32	4.219*	67	3.179	66	3.500*	67	3.627*	24	3.333	30	2.867	43	2.907
29	357	19	3.316	8	2.625	32	4.031	66	3.667	67	3.716	67	3.896	24	3.458	30	3.967	44	3.659
30	357	19	3.579	8	3.375	32	3.719	66	4.136	67	4.075	68	4.118	23	3.304	30	3.700	44	3.591
31	365	19	4.158	8	4.625	35	4.971	67	4.522	68	5.000	69	4.232	24	3.625	29	4.862	45	4.156
32	363	19	3.684	8	3.750	34	4.206	68	4.441	67	4.552	68	4.029	24	3.833	30	3.633	44	3.273
33	363	19	4.421	8	3.750	33	4.424	68	4.441	68	4.221	68	4.691	24	4.292	29	3.069	45	3.489
34	358	19	4.947	8	5.000	31	4.452	66	4.318	68	4.309	68	4.529	24	3.625	30	4.567	43	4.860
35	355	19	4.421	8	4.625	31	4.613	64	3.938	68	4.368	68	4.515	24	3.417	30	4.367	43	3.628
36	358	19	4.000	8	4.000	33	4.364	67	4.104	66	4.197	67	4.642	24	3.292	29	3.897	45	3.600
37	359	19	3.316	8	3.375	34	3.765	69	3.870	67	3.821	66	4.470	23	3.391	29	3.690	44	3.386
38	362	19	3.947	8	4.125	34	4.618	69	4.362	66	4.712	68	4.559	23	4.130	30	4.733	45	3.600
39	361	19	4.000	8	3.125	35	4.343	69	3.913	68	4.221	67	4.224	23	3.348	28	4.250	44	3.318
40	360	19	4.211	8	4.125	35	4.543	68	3.750	68	4.455	67	4.522	24	3.500	29	4.241	44	3.568
Mean for Component			3.152		3.078		3.781		3.512		3.602		3.751		3.216		3.556		3.243

Table 5

GREATEST AND LOWEST DIFFERENCES
BY VOCATIONAL CATEGORY

GREATEST DIFFERENCES

Rank	Agri-culture		Distri-butive		Health		Cons. & Home Ec.		Ind. Arts		Office		Technical		Trade & Industry		More than one	
	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean	Stmt	Mean
1	34	4.947	10	5.000	31	4.971	31	4.522	31	5.000	33	4.691	33	4.292	31	4.862	34	4.860
2	35	4.421	34	5.000	38	4.618	32	4.441	38	4.712	36	4.642	38	4.130	38	4.733	31	4.156
3	40	4.211	24	4.875	35	4.613	33	4.441	32	4.552	38	4.559	32	3.833	8	4.621	26	3.705
4	31	4.158	8	4.625	40	4.543	38	4.362	40	4.455	34	4.529	10	3.800	10	4.567	10	3.682
5	10	4.053	31	4.625	34	4.452	34	4.318	35	4.368	40	4.522	26	3.783	34	4.567	29	3.659
6	39	4.000	38	4.125	27	4.441	30	4.136	34	4.309	35	4.515	1	3.750	35	4.367	24	3.643
7	38	3.947	40	4.125	33	4.424	36	4.104	33 & 39	4.221	37	4.470	22 & 27	3.708	23	4.333	35	3.628

LOWEST DIFFERENCES

1	28	1.737	14	1.250	16	2.194	16	1.284	16	1.891	16	2.364	16	1.500	16	1.929	16	1.605
2	25	2.000	16	1.375	13	2.500	13	1.667	13	2.400	13	2.538	14	2.333	13	2.167	13	1.667
3	9	2.053	4,13 & 28	1.500	3	2.606	25	2.358	18	2.939	23	3.441	4	2.560	12	2.793	3	2.591

2. Academic Degree

Five of the 40 statements showed statistically significant differences among the variables of academic degree (Associate, Bachelor, Master, or Doctor). See Table 6. For #16, the respondents whose highest degree was a bachelor's, indicated by a low mean discrepancy between present and desired level of competency or knowledge (1.459), that, as a group, they felt confident about accepting the special education students the same as others. For statements #20 (competency to conduct parent-teacher conferences) and #23 (competency to develop IEP's) persons with master's and doctor's degrees felt more confident than those holding the AA and BA degrees. For statement #31 regarding knowledge of legal standards appropriate for teaching handicapped students, persons with master's degrees were significantly lower but still at 4.169, indicating some need for inservice. For statement #39 regarding knowledge of programs and services for the handicapped, those holding associate and master's degrees were significantly lower but still high, at 3.692 and 3.713 respectively.

For all 40 statements, the mean differences among respondents with different degrees produce the expected results, with the associates showing the highest discrepancy between present and desired competencies, and the doctorates the lowest: associate - 3.912, bachelor - 3.708, master - 3.500, and doctor - 3.278.

A study of the data in Table 7 shows that statement #23 (developing IEP's) is highest for the persons with associate degrees but does not appear in the highest quartile for the other three groups. Likewise, statement #30 (competency to obtain follow-up information) is unique to persons with doctor's degrees, indicating their greater perceived need for inservice in that area.

Table 6

DIFFERENCES BY ACADEMIC DEGREE

Statement	N	Associate		Bachelor		Master		Doctor	
		n	Mean Diff	n	Mean Diff	n	Mean Diff	n	Mean Diff
1	360	13	4.538	110	3.673	213	3.676	24	2.917
2	365	14	4.214	111	3.297	216	3.458	24	3.625
3	355	14	3.071	110	2.818	208	3.317	23	2.522
4	362	14	3.000	110	3.500	215	3.414	23	2.870
5	367	14	3.929	112	3.545	217	3.286	24	3.000
6	367	14	4.500	112	3.446	217	3.525	24	3.042
7	365	13	4.077	111	3.631	217	3.290	24	2.542
8	356	11	4.182	112	3.920	210	3.543	23	3.261
9	364	13	4.692	111	3.099	216	2.995	24	3.083
10	362	14	5.143	112	3.982	214	4.093	22	3.045
11	362	14	4.214	112	3.393	212	3.269	24	2.750
12	362	13	4.077	112	3.446	213	3.216	24	3.458
13	361	14	2.929	113	2.097	211	2.104	23	2.348
14	355	13	4.000	107	3.196	211	3.232	24	3.000
15	348	13	3.769	107	3.458	206	3.495	22	4.091
16	353	14	3.071	109	1.459*	207	1.884	23	2.435
17	350	13	3.154	108	3.630	206	3.432	23	2.870
18	361	14	3.714	111	3.369	212	3.307	24	2.875
19	358	14	3.857	110	3.709	210	3.381	24	3.167
20	348	12	3.833	112	3.955	201	3.209*	23	3.043*
21	361	14	4.429	112	3.714	211	3.256	24	2.833
22	363	14	4.357	112	3.580	213	3.653	24	3.583
23	359	13	5.308	111	3.892	211	3.502*	24	2.708*
24	352	13	4.461	108	4.046	207	3.700	24	2.958
25	360	14	2.857	110	2.727	212	2.849	24	2.583
26	358	14	3.643	110	3.482	211	3.474	23	3.087
27	365	14	3.929	110	3.355	217	3.751	24	2.583
28	354	14	3.429	110	3.136	209	3.301	21	3.143
29	357	13	3.538	110	3.682	212	3.755	22	3.636
30	356	14	3.429	109	3.963	212	3.877	22	4.136
31	365	14	4.857	109	5.174	219	4.169*	24	4.458
32	363	14	4.357	111	4.541	216	3.824	23	3.870
33	363	14	4.214	111	4.622	217	4.051	22	3.455
34	356	14	4.571	112	4.902	210	4.195	22	4.364
35	353	14	4.214	109	4.606	210	4.010	22	3.818
36	359	14	3.571	111	4.568	213	4.009	22	3.455
37	359	14	4.571	111	4.108	213	3.638	22	3.636
38	362	14	4.857	111	4.829	215	4.144	23	4.478
39	362	13	3.692*	111	4.495	216	3.713*	23	4.087
40	361	14	4.429	110	4.291	215	4.000	23	4.304
Mean for Component			3.912		3.708		3.500		3.278

*Statistically significant differences at the .05 level

Table 7

GREATEST AND LOWEST
DIFFERENCES BY ACADEMIC DEGREE

GREATEST DIFFERENCES

	Associate		Bachelor		Master		Doctor	
	Statement	Mean Diff	Statement	Mean Diff	Statement	Mean Diff	Statement	Mean Diff
1	23	5.308	31	5.174	34	4.195	38	4.478
2	10	5.143	34	4.902	31	4.169	31	4.458
3	31	4.857	38	4.829	38	4.144	34	4.364
4	38	4.857	33	4.622	10	4.093	40	4.304
5	9	4.692	35	4.606	33	4.051	30	4.136
6	34	4.571	36	4.568	35	4.010	15	4.091
7	37	4.571	32	4.541	36	4.009	39	4.087

LOWEST DIFFERENCES

1	25	2.857	16	1.459	16	1.884	13	2.348
2	13	2.929	13	2.097	13	2.104	16	2.435
3	4	3.000	25	2.727	25	2.849	3	2.522

3. Age

The average age for the teachers in the study is 40 in a range of 24 to 67.

The vocational teachers over 50 years of age presented the greatest difference between present and desired levels of competency and knowledge; i.e., as shown in Table 8, they indicated the greatest perceived need for inservice in dealing with the handicapped in their classes. Those over 50 years had a mean difference on all 40 statements of 3.953 compared with 3.618 for those under 35 years and 3.469 for those between 35 and 50. The latter appear to perceive the least need for inservice.

There were four statements showing statistically significant differences among the age groups of vocational educators. They are: 15 (select training stations), 25 (evaluate behavior), 30 (obtain follow-up information), and 35 (modifications of jobs).

Since teachers from 35 to 50 years of age show low mean differences and teachers over 50 show high mean differences, it appears that teachers over the age of 50 perceive the greatest need for inservice.

None of the three age groups was significantly different from the other two in respect to any of the 40 statements or to the seven statements with the highest difference or the three lowest, as shown in Table 9.

Table 8

DIFFERENCES BY AGE

Statement	Total N	Less than 35 years n	Less than 35 years Mean Diff	35-50 years n	35-50 years Mean Diff	Over 50 years n	Over 50 years Mean Diff
1	357	98	3.571	185	3.611	74	4.014
2	363	98	3.255	191	3.403	74	4.095
3	351	96	3.021	183	3.120	72	3.389
4	357	96	3.260	188	3.367	73	3.753
5	363	98	3.408	189	3.312	76	3.539
6	364	99	3.374	189	3.508	76	3.776
7	362	99	3.323	189	3.312	74	3.757
8	353	95	3.979	187	3.412	71	4.014
9	360	98	2.796	189	3.122	73	3.562
10	358	97	4.196	186	3.957	75	4.200
11	360	98	3.224	187	3.316	75	3.547
12	359	96	3.129	189	3.307	74	3.581
13	357	97	1.794	188	2.324	72	2.347
14	352	94	3.202	186	3.134	72	3.819
15	346	91	3.538	180	3.328*	75	4.227*
16	349	98	2.010	181	1.591	70	2.286
17	347	93	3.495	181	3.495	73	3.753
18	360	98	3.357	189	3.312	73	3.411
19	355	95	3.600	187	3.401	73	3.753
20	345	93	3.774	181	3.210	71	3.887
21	358	96	3.750	188	3.197	74	3.811
22	360	99	3.737	189	3.497	72	3.986
23	356	97	3.649	184	3.511	75	4.067
24	349	94	3.904	180	3.650	75	4.200
25	358	98	2.959	187	2.524*	73	3.315*
26	356	97	3.381	184	3.429	75	3.773
27	362	98	3.398	190	3.468	74	4.189
28	351	97	3.237	181	3.144	73	3.808
29	353	95	3.632	183	3.634	75	4.253
30	353	94	4.085	185	3.654*	74	4.541*
31	362	97	4.608	190	4.374	75	4.987
32	360	98	4.378	189	4.037	73	4.027
33	360	97	4.433	189	4.048	74	4.608
34	354	96	4.541	186	4.542	72	4.764
35	351	93	4.473	187	3.904*	71	4.761*
36	355	96	4.260	186	4.005	73	4.397
37	356	98	3.796	185	3.757	73	4.123
38	359	98	4.367	187	4.310	74	4.959
39	358	98	4.398	186	3.774	74	4.189
40	358	98	4.439	186	3.769	74	4.662
Mean for Component			3.618		3.469		3.953

*Statistically significant differences at the .05 level

Table 9

GREATEST AND LOWEST MEAN DIFFERENCES
ACCORDING TO AGE

Greatest Mean Differences

	Under 35 years		35-50 years		Over 50 years	
	Statement	Mean Diff	Statement	Mean Diff	Statement	Mean Diff
1	31	4.608	34	4.542	31	4.987
2	34	4.541	31	4.374	38	4.959
3	35	4.473	38	4.310	34	4.764
4	40	4.439	33	4.048	35	4.761
5	33	4.433	32	4.037	40	4.662
6	39	4.398	36	4.005	33	4.608
7	32	4.378	10	3.957	30	4.541

Lowest Mean Differences

1	13	1.794	16	1.591	16	2.286
2	16	2.010	13	2.324	13	2.347
3	9	2.796	25	2.524	25	3.315

4. Years of Experience

The average number of years of experience for all teachers in the study is 12 and the median for all teachers is 10 years in a range of one to 45 years.

There were no statements for which there was a statistically significant difference based upon length of experience. The data in Table 10 were placed into three components, one through three years, four through ten years, and over ten years.

The differences between present and desired levels of competency and knowledge are, as might be expected, greatest for the teachers with the least experience (3.828), less for those with four to ten years (3.734) and lowest for the more experienced teachers (3.454).

A significant difference among the three groups is seen only in relation to one statement -- #17 (translating statements describing physical and sensory limitations into statements concerning instructional adaptations), where teachers with the least experience felt the least need for inservice. See Table 11.

It should be pointed out that the number of teachers with one to three years experience is only 18, in contrast to the other two groups with 121 and 217, for statement #17.

Table 10

DIFFERENCES BY YEARS OF EXPERIENCE

Statement	Total N	1-3 years n	1-3 years Mean Diff	4-10 years n	4-10 years Mean Diff	Over 10 years n	Over 10 years Mean Diff
1	367	21	3.381	124	3.847	222	3.590
2	373	20	3.300	126	3.460	227	3.493
3	361	19	3.526	124	3.403	218	2.894
4	367	20	3.950	124	3.298	223	3.377
5	373	20	3.500	126	3.627	227	3.202
6	374	21	3.857	125	3.672	228	3.377
7	372	21	3.952	124	3.403	227	3.295
8	363	20	4.350	120	3.950	223	3.448
9	370	20	2.350	125	3.272	225	3.058
10	368	21	4.714	122	4.336	225	3.791
11	369	21	3.381	126	3.437	222	3.261
12	369	20	3.850	125	3.440	224	3.214
13	367	21	1.619	124	2.056	222	2.261
14	362	17	3.235	123	3.252	222	3.239
15	355	18	4.222	120	3.508	217	3.493
16	358	20	1.550	123	1.772	215	1.888
17	356	18	2.000	121	3.496	217	3.488
18	368	20	3.500	126	3.437	222	3.221
19	365	20	3.950	124	3.734	221	3.294
20	354	20	4.750	119	3.689	215	3.219
21	368	21	4.095	123	3.667	224	3.237
22	370	20	3.700	127	3.803	223	3.547
23	366	20	4.200	125	3.912	221	3.489
24	358	21	2.905	120	4.258	217	3.622
25	367	21	2.429	126	2.952	220	2.718
26	365	21	3.000	125	3.504	219	3.475
27	372	21	4.190	126	3.683	225	3.444
28	361	21	3.619	122	3.557	218	3.092
29	363	21	4.286	119	3.857	223	3.610
30	363	21	4.429	120	4.117	222	3.739
31	372	21	5.381	122	4.615	229	4.393
32	370	21	4.905	124	4.306	225	3.862
33	370	21	5.476	123	4.236	226	4.080
34	364	20	4.500	124	4.806	220	4.241
35	361	17	4.765	123	4.683	221	3.873
36	365	20	4.600	120	4.325	225	3.973
37	366	21	3.238	122	3.717	223	3.717
38	369	21	5.095	124	4.427	224	4.335
39	368	21	5.048	123	4.341	224	3.696
40	367	21	4.333	124	4.516	222	3.919
Mean for Component			3.828		3.734		3.454

Table 11

GREATEST AND LOWEST
DIFFERENCES BY YEARS OF EXPERIENCE

GREATEST DIFFERENCE

Rank	1-3 Years		4-10 Years		Over 10 Years	
	Statement	Mean Diff	Statement	Mean Diff	Statement	Mean Diff
1	33	5.476	34	4.806	31	4.393
2	31	5.381	35	4.683	38	4.335
3	38	5.095	31	4.615	34	4.241
4	39	5.048	40	4.516	33	4.080
5	32	4.905	38	4.427	36	3.973
6	35	4.765	39	4.341	40	3.919
7	20	4.750	10	4.336	36	3.873

LOWEST DIFFERENCE

1	16	1.550	16	1.772	16	1.888
2	13	1.619	13	2.056	13	2.261
3	17	2.000	25	2.952	25	2.718

5. Sex

Among the men and women included in the study and reported in Table 12, the women generally perceived a greater need for inservice by recording a mean difference between present and desired levels of competency and knowledge of 3.728 compared to the mean difference for men of 3.424.

There was a statistically significant difference between men and women for seven of the 40 statements, and in all seven, women perceive themselves to have a greater need for additional knowledge or competency than do men. The seven statements are:

#4 Refer handicapped students to appropriate school and community resources.

#5 Assist the handicapped student in assessing his/her assets and limitations.

#11 Use a variety of teaching methods to provide instruction for handicapped students.

#18 Sequence tasks to conform with learning styles, pace, and potential of handicapped students.

#21 Develop and integrate program for each handicapped student in cooperation with other school personnel.

#22 Develop an awareness of how to recognize students with learning problems in the regular classroom.

#33 Sources of information on career educational adaptations for the handicapped student.

Women recorded a 21% higher difference than men between present and desired competencies (statements 1 through 30).

Since the data reflect the teachers' own perceptions of their competency and knowledge, the results do not necessarily mean that women are less competent than men. It could be that the women are simply more aware of their own deficiencies than are the men.

Table 12

DIFFERENCES FOR SEX

Statement	n	Men Mean Diff	n	Women Mean Diff	Statement	n	Men Mean Diff	n	Women Mean Diff
1	223	3.520	141	3.816	21	225	3.138*	140	3.814*
2	225	3.249	145	3.724	22	222	3.387*	145	3.993*
3	222	2.896	137	3.357	23	222	3.622	141	3.674
4	224	3.089*	141	3.794*	24	218	3.739	137	3.803
5	226	3.053*	145	3.800*	25	224	2.781	140	2.714
6	228	3.399	143	3.615	26	221	3.380	141	3.496
7	226	3.248	143	3.490	27	227	3.374	142	3.789
8	221	3.615	139	3.647	28	219	3.160	139	3.367
9	224	3.076	144	3.049	29	223	3.605	137	3.832
10	225	4.022	140	3.929	30	221	3.760	139	4.086
11	224	3.085*	142	3.620	31	224	4.446	145	4.586
12	226	3.097	140	3.593	32	224	3.924	143	4.252
13	223	2.179	141	2.035	33	225	3.902*	142	4.634*
14	221	3.050	138	3.457	34	222	4.333	139	4.532
15	217	3.433	135	3.615	35	221	4.068	137	4.307
16	219	1.836	137	1.781	36	222	3.869	140	4.450
17	213	3.211	141	3.681	37	220	3.591	143	4.070
18	222	2.973*	143	3.755*	38	222	4.356	144	4.403
19	222	3.234	140	3.779	39	221	3.855	144	4.104
20	218	3.339	133	3.594	40	221	4.077	143	4.154
					Mean for Component		3.424		3.726

*Statistically significant difference at the .05 level.

Table 13

GREATEST AND LOWEST DIFFERENCES
FOR SEX

Greatest Differences

	Men		Women	
	Statement	Mean Diff	Statement	Mean Diff
1	31	4.446	33	4.634
2	38	4.356	31	4.586
3	40	4.077	34	4.532
4	35	4.068	36	4.450
5	10	4.022	38	4.403
6	32	3.924	35	4.307
7	33	3.902	32	4.252

Lowest Differences

1	16	1.836	16	1.781
2	13	2.179	13	2.035
3	25	2.781	25	2.714

6. Teaching Assignment

The three groups compared in this category were: 1) secondary vocational teachers presently teaching classes which included special education students, 2) secondary vocational teachers not presently teaching special education students, and 3) all the community college teachers.

There were no statistically significant differences in the responses for any of the statements for any of the three groups (see Table 14). There was little variation between the mean differences for all statements between the secondary teachers working with special education students (3.469) and the community college teachers (3.472). However, those secondary teachers not now working with special education students in their classes indicated, as expected, a greater need for special education inservice, with a ten percent higher mean difference (3.821) than the other two groups.

Table 14

DIFFERENCES BETWEEN TEACHERS BY (1) SECONDARY TEACHING HANDICAPPED
(2) SECONDARY NOT TEACHING HANDICAPPED AND
(3) COMMUNITY COLLEGE TEACHERS

Statement	N	Sec.-S.E.		Sec.-No S.E.		Com. College	
		n	Mean Diff	n	Mean Diff	n	Mean Diff
1	367	168	3.631	79	3.949	120	3.525
2	373	170	3.447	81	3.494	122	3.492
3	361	164	2.878	80	3.188	117	3.359
4	367	167	3.096	79	3.532	121	3.678
5	373	167	3.120	83	3.759	123	3.423
6	374	170	3.306	82	3.927	122	3.492
7	372	169	3.231	82	3.829	121	3.248
8	363	162	3.537	81	3.840	120	3.717
9	370	167	3.024	82	3.366	121	3.000
10	368	167	3.904	82	4.390	119	3.941
11	369	165	3.152	83	3.904	121	3.174
12	369	165	3.200	82	3.622	122	3.295
13	367	165	2.018	80	2.250	122	2.279
14	362	162	3.167	81	3.481	119	3.185
15	355	158	3.373	82	3.756	115	3.600
16	358	164	1.774	77	2.117	117	1.718
17	356	161	3.422	79	3.785	116	3.155
18	368	166	3.325	80	3.275	122	3.311
19	365	165	3.467	82	3.476	118	3.500
20	354	157	3.306	81	3.667	116	3.534
21	368	166	3.259	83	3.687	119	3.487
22	370	167	3.772	82	3.768	121	3.380
23	366	166	3.687	82	3.646	118	3.669
24	358	162	3.975	79	3.481	117	3.752
25	367	165	2.661	81	3.148	121	2.702
26	365	163	3.411	82	3.756	120	3.317
27	372	168	3.696	83	3.614	121	3.355
28	361	164	3.299	81	3.444	116	3.138
29	363	166	3.464	81	4.086	116	3.862
30	363	164	3.591	81	4.235	118	4.110
31	372	170	4.341	82	4.976	120	4.467
32	370	167	3.784	82	4.549	121	4.140
33	370	167	4.006	82	4.512	121	4.289
34	364	163	4.252	82	4.622	119	4.597
35	361	161	4.068	82	4.439	118	4.186
36	365	166	4.066	80	4.738	119	3.790
37	366	164	3.774	81	3.975	121	3.769
38	369	166	4.349	81	4.765	122	4.254
39	368	166	3.849	80	4.400	122	3.910
40	367	166	4.084	80	4.375	121	4.074
Mean for Component			3.469		3.821		3.472

Table 15

GREATEST AND LOWEST
DIFFERENCES BETWEEN TEACHING ASSIGNMENT:
(1) SECONDARY TEACHING HANDICAPPED
(2) SECONDARY NOT TEACHING HANDICAPPED
AND
(3) COMMUNITY COLLEGE TEACHERS

GREATEST DIFFERENCE

Rank	Secondary - Spec. Ed. Statement	Secondary - Spec. Ed. Mean Diff	Secondary - No Spec. Ed. Statement	Secondary - No Spec. Ed. Mean Diff	Community College Statement	Community College Mean Diff
1	38	4.349	31	4.976	34	4.597
2	31	4.341	38	4.765	31	4.467
3	34	4.252	36	4.738	33	4.289
4	40	4.084	34	4.622	38	4.254
5	35	4.068	32	4.549	35	4.186
6	36	4.066	33	4.512	32	4.140
7	33	4.006	35	4.439	30	4.110

LOWEST DIFFERENCE

1	16	1.774	16	2.117	16	1.718
2	13	2.018	13	2.250	13	2.279
3	25	2.661	25	3.148	25	2.702

SECTION IV - CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Vocational education teachers, in general, recognize their need for additional information and/or training to enable them to be effective teachers of the handicapped. By measuring the difference between their perceived present and desired levels of competency and knowledge, this project's findings show that, on a ten point scale, there is an overall discrepancy of 3.572.

The 407 teachers in this study rated themselves as in greater need of "knowledge" (statements 31 through 40) than of "competency" to include special education students in their classes. The "knowledge" statements showed an average difference of 4.152 and the "competency" statements 3.366, both of which are high enough to suggest the need for inservice training.

When the statements are ranked according to their representative mean differences (Table 2), statements citing (a) knowledge of legal standards and laws, (b) modifications of equipment, facilities, and jobs, (c) appropriate expectations, and (d) agencies and organizations are the special education areas perceived as being most important for planning inservice training.

The areas of lowest mean differences are those concerned with accepting special education students, evaluating their behavior, and interacting positively with these students, indicating the least need for inservice in these areas.

Considering vocational teaching categories, Health Service and Office Training teachers showed statistically significant high mean differences indicating a need for inservice; whereas, the Distributive, Agriculture, and Technical categories had a lower perceived difference between present and desired levels of competency and knowledge for teaching special education students.

Among the other variables, significant differences within their components are summarized as follows:

The data for Academic Degree revealed an inverse relationship between the high mean differences (need for inservice) and the amount of academic training; teachers with doctorates had the lowest mean differences (least need of inservice).

Differences of means in the Age variable found the group of teachers over 50 years

of age perceiving a higher discrepancy (need for inservice) between present and desired levels of competency and knowledge on statements 15 (select training stations), 25 (evaluate behavior), 30 (obtain follow-up information), and 35 (modification of jobs), while the middle group (35 to 50 years of age) responding to the same statements, were significantly lower in their perceived need for inservice.

Years of Experience follows the pattern of academic degree by indicating that the more years of experience the teacher has, the lower will be the perceived need for inservice. There were no mean differences which were statistically significant between the three experience groups for any of the 40 statements.

In regard to the Men/Women comparisons, women, significantly more than the men, perceive a need for improving their competencies. On seven statements where there was a statistically significant difference between the sexes, six were concerned with competency to deal with special education students; women found the difference between present and desired competencies to be 21 percent higher than that of the men.

In regard to the different Teaching Assignments--(a) secondary teachers who were teaching the handicapped at the time of the survey, (b) secondary teachers not teaching the handicapped, and (c) all community college teachers--there was no statistically significant difference between groups for any of the statements. However, when the mean differences for all statements under each group are compiled, groups (a) and (c) are identical and .351 points lower than the compiled differences for the secondary teachers who do not now have special education students in their classes.

With the large mean difference of 3.572 points on a ten point scale between the present and desired levels of competency and knowledge, there seems to be little doubt that the teachers, as a group, perceive the need for additional training to increase their success in dealing with special education students.

Because of the heterogeneity of the vocational educators surveyed, it seems probable that a generalization could be made to apply the findings and recommendations of this study to all secondary and community college teachers who have, or will have special education students mainstreamed into their classes.

B. Recommendations: The recommendations resulting from an analysis of the data developed in the course of this project are:

1. That all vocational education teachers have the opportunity to participate in appropriate inservice training which will improve their competency in dealing with special education students placed in their classrooms.
2. That the training emphasis, at least until local need is further identified, be on the special knowledge needed to teach and serve the handicapped.
3. That the initial emphasis be placed on inservice programs for Health Service and Office Training teachers, for women teachers in all categories, and for the teachers with the least amount of training and experience.
4. That the specific subject areas for inservice training be chosen generally in accordance with the ranked list in Table 2.
5. That, if there is any resistance to vocational inservice, a survey similar to the one used in this project (perhaps with as few as ten statements) be used to determine local needs. This action also has the advantage of having local persons providing direction for inservice programs in which they will participate.
6. That similar studies be done for teachers in other subject areas who work with the special education students.
7. That the next step for vocational education research be evaluation of the degree to which vocational education meets the needs of the handicapped.

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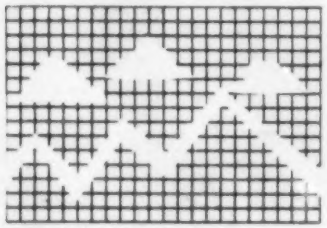
APPLIED RESEARCH, INC.

SANTA BARBARA



Hollister Professional Plaza
5266 Hollister Ave. Suite B-225
Santa Barbara, CA 93111

May 1, 1981

Dear Vocational Educator:

You are one of 750 vocational education teachers in California being asked to give opinions about present and desired competencies and knowledge in teaching handicapped students in vocational education classes.

The attatched questionnaire has been developed by Santa Barbara Applied Research, Inc. as part of a California Department of Education study on the in-service needs of vocational education teachers to serve the handicapped, as required by Public Law 94-142. Essentially, the law says that all handicapped (special education) students shall have the same educational opportunities as other students.

You were selected through California Basic Educational Data System (CBEDS). A random sample was made of California junior high and senior high teachers, plus a sample of 250 community college teachers. In order for the study to be valid, it is important that you help by providing certain information. The results will be distributed throughout the state and will be sent to you when the study is completed.

We have found that the questionnaire takes less than 20 minutes to complete. It will be greatly appreciated if you would do it today and mail it back to Santa Barbara Applied Research in the enclosed stamped envelope. Your response will be anonymous. The number on the questionnaire will be reported to a private, independent agency, so that the personnel there, who never see the completed instrument, can put your name in a drawing for one of the 20 pocket calculators to be given to those who return the questionnaires.

After reading each statement, please put a number from one (low) to ten (high) in the first column, which indicates what you feel is your present level of competence or knowledge, and then a number which represents your desired level.

Thank you for your assistance.

Sincerely yours,
SANTA BARBARA RESEARCH, INC.

Sidney R. Ottman, Ed.D.
Director of Special Projects

SRO:va
Enclosure
Letter from State Dept. of Ed.

Special Education Training Needs of Vocational Teachers

Please Indicate Your Present and Desired Levels of Competency to:	Level of Competency	
	Present	Desired
	One to Ten	One to Ten
1. Use and supervise support service personnel in providing vocational training for handicapped persons.		
2. Communicate effectively with other professions to solve problems of handicapped students.		
3. Adjust to accommodate architectural barriers which interfere with the training of handicapped.		
4. Refer handicapped students to appropriate school and community assistance resources.		
5. Assist the handicapped student in assessing his/her assets and limitations.		
6. Assist in identifying vocational education objectives for the handicapped student.		
7. Advise and counsel handicapped students relative to their occupational goals.		
8. Counsel parents/gardians of handicapped students regarding their children's occupational goals.		
9. Assist handicapped students in developing and maintaining positive self-concepts.		
10. Provide orientation for potential employers of handicapped students.		
11. Use a variety of teaching methods to provide instruction for handicapped students.		
12. Apply individual instructional prescriptions to all handicapped pupils in classes.		
13. Interact positively with the handicapped student.		
14. Modify the instructional environment for each handicapped learner.		
15. Select cooperative training stations for each handicapped learner.		

Please Indicate Your Present and Desired Levels of Competency to:	Level of Competency	
	Present	Desired
	One to Ten	One to Ten
16. Accept handicapped students on the same basis as others in my classes.		
17. Translate statements describing physical and sensory limitations into statements concerning instructional adaptations.		
18. Sequence tasks to conform with learning styles, pace, and potential of handicapped students.		
19. Complete cooperative training agreements unique to meeting the needs of each handicapped learner.		
20. Conduct parent/teacher conferences for planning instructional programs.		
21. Develop an integrated program for each handicapped student in cooperation with other school personnel.		
22. Develop an awareness of how to recognize students with learning problems in the regular classroom.		
23. Assist in the development of the Individualized Educational Program (IEP) for handicapped students.		
24. Evaluate the performance of handicapped students according to the objectives of the IEP.		
25. Evaluate the behavior of handicapped students through observation.		
26. Use behavior modification techniques with handicapped students.		
27. Evaluate the degree to which vocational programs meet the needs of the handicapped.		
28. Integrate handicapped students in an ongoing student vocational organization.		
29. Assist handicapped students in finding employment.		
30. Obtain follow-up information on handicapped students who have had vocational classes.		

Please Indicate Your Present and Desired Levels of Knowledge Regarding:	Level of Knowledge	
	Present	Desired
	One to Ten	One to Ten
31. Legal standards appropriate for teaching handicapped students.		
32. Local agencies to assist handicapped students for additional training, such as vocational rehab., community colleges, and appropriate voluntary associations.		
33. Sources for information on career educational adaptations for the handicapped students.		
34. Modifications of machinery, tools, and facilities needed for handicapped students.		
35. Modifications of jobs to accommodate the limitations of handicapped persons.		
36. Appropriate expectations (approved scales) for the performance of handicapped persons.		
37. Vocabulary of other professionals used in reports concerning handicapped students.		
38. State laws regarding vocational special education.		
39. Programs and services provided through the Special Education in your vocational area.		
40. Professional education organizations concerned with the needs of handicapped learners.		

Thank you for your valuable assistance

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